Spectro Scientific
AMETEK

FieldLab 33C

PORTABLE FLUID ANALYSIS SYSTEM

SITE SERVICE | Problem avoidance with oil and grease analysis

FieldLab 33C is a battery-powered, integrated oil analysis system that provides quick and comprehensive oil analysis in the field.

High quality data on lubricant chemistry, contamination, and ferrous wear debris, empowers equipment maintainers to achieve both immediate and near term cost reduction and failure avoidance.

The FieldLab 33C integrated system requires only a few milliliters of oil to complete three comprehensive tests to help maintain readiness of critical assets while economically managing maintenance costs.

Key Features

- Rugged design with battery power for on-site field use
- No solvents or chemicals required
- Complete oil analysis lab with 3 technologies integrated into a small case
  - Ferrous debris analyzer
  - Infrared (IR) spectrometer
  - Kinematic viscometer (40°C)
- 3 tests generate up to 10 oil analysis parameters in less than 5 minutes
- Built-in controller for measurement, data, and asset with touch screen interface
- Uses only 2 ml of oil
- ASTM compliant

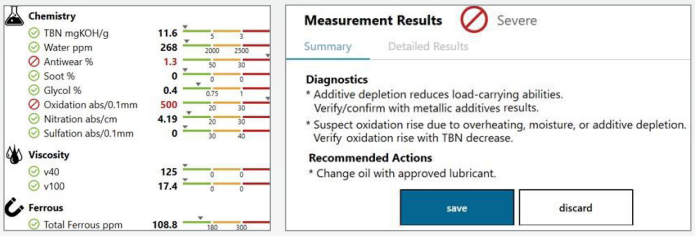
WIND GEAR DRIVES | **BEARINGS** | **TRANSMISSIONS**

FieldLab 33C COMPLETE IN-SERVICE OIL ANALYSIS LAB IN THE FIELD

Easy to Use

- No solvents or reagents and small sample volumes required
- Intuitive Interface and simple workflow minimizes human error
- Built-In Video Instruction for inexperienced users

Smart diagnostics, flexible alarm setting



- Easy to read oil analysis report with clear Observations, Diagnostics, and Recommended Actions.
- Factory alarm limit tables for common components
- User-customizable alarm limits and diagnostic sets for continuous improvement over time

Optional Interface with TruVu 360 Fluid Intelligence Software

- Summary dashboards for visibility into asset condition and fleet readiness
- Management dashboard for CBM oil-analysis program management views of cost savings and program key performance indicators (KPIs)

KEY PARAMETERS

MACHINE WEAR
› **Ferrous debris analysis in ppm**

CONTAMINATION
› **Water, glycol, soot**

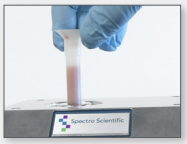
CHEMISTRY & VISCOSITY
› **Oxidation, nitration, sulfation, TAN, TBN**
› **Viscosity @40°C, calculated viscosity @100°C**

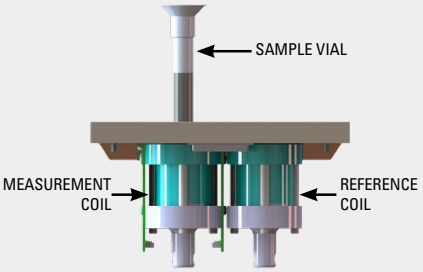
PRINCIPLES OF OPERATION

Ferrous debris analysis – ASTM D8120

› WEAR › PARTICLE CONTAMINATION

The core of the ferrous debris analyzer is a pair of precision-rounded coils that when powered generate magnetic fields. When a small amount of in-service oil is inserted into one of the coils, ferrous particles such as iron, nickel and cobalt interact with the magnetic field and introduce current changes in the coils. The amount of current change is proportional to the amount of ferrous particles in the oil, calibrated in weight by parts per million (ppm).





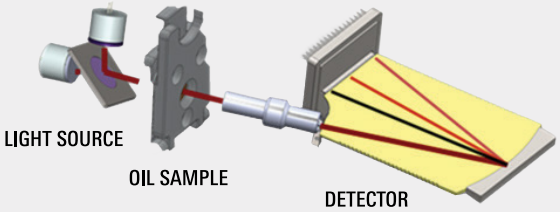
Schematic of Coil Around Sample

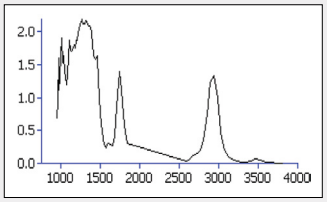
Fluid chemistry and contamination – ASTM D7889

› CHEMISTRY › WATER

The IR spectrometer measures the chemistry of the lubricant and contamination in one minute using only one drop of oil; no chemicals or solvents are required. It combines ease of use, ruggedness and laboratory precision in a small package, which is ideal for field use.

The oil condition parameters measured by FluidScan include oxidation, nitration, sulfation, anti-wear additive, Total Base Number (TBN), glycol, soot, and water for engine oil; and oxidation, Total Acid Number (TAN), and water for rotating machine lubricants such as gear oil, transmission oil and hydraulic oil.





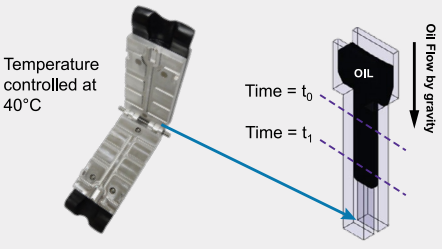
IR Spectrum

Viscosity – ASTM D8092

› VISCOSITY

Viscosity is measured using a temperature-controlled kinematic viscometer with a patented split-cell design.

A funnel, with a 100 micron gap, is formed in the center of the cell. Optical sensors in the cell detect the flow of oil under the influence of gravity. The time it takes the oil to flow through the cell is proportional to the viscosity of the oil. When open, the cells can be cleaned using a non-abrasive wipe. No solvents are required.



Kinematic Viscosity (40°C) = A* (t_1-t_0) + B

*A and B are calibration coefficients

FieldLab 33C Product Information

PRODUCT INFORMATION	
Part Numbers	800-00246 FieldLab 33C 800-00249 FieldLab FL33C with TruVu 360 Pro software 100-00795 TruVu 360 Cloud Service
Applications	Mineral and synthetic lubricants including gear, engines, transmissions, hydraulics, turbine as well as military, marine and mining applications
OPERATIONAL SPECIFICATIONS	
Sample Volume Required (all tests)	2ml
Sample Time Required	Less than 10 minutes through all 3 tests
Ambient Operating Temperature	0° to 40°C
Operational Humidity	RH< 80% non-condensing
Ambient Altitude	Up to 5,000 meters (16,404 feet)
USER INTERFACE SPECIFICATIONS	
Display	Color touchscreen display
Data Storage	Internal flash memory, Optional USB thumb drive
Data Transfer	WiFi, Bluetooth, USB
Data Entry	Desktop software via touchscreen or optional USB keyboard
POWER REQUIREMENTS	
Battery Power Source	Lithium-ion battery pack
Charge Power	110/240 VAC, 50/60 Hz, 12 Watts
Typical Runtime	>3 hours on battery
Recharge Time	3 hours
MECHANICAL SPECIFICATIONS	
Dimensions	48 cm (L) x 39 cm (W) x 23 cm (H); 19.2" x 15.2" x 9"
Weight	16.5 kg (36 lbs); 35 kg (77 lbs) in transit case

COMPLIANCE

CE conformity:LVD 2014/35/EUEMC2014/30/EU
EN 61326-1:2013
EN61000-4-2:2009
EN61000-4-3:2006 +A1 +A2
EN61000-4-4:2012
EN61000-4-5:2014
EN61000-4-6:2013
EN61000-3-2:2014
EN61000-3-3:2008 +A1:2001 +A2:2005
EN 61010-1:2010 +A1:2016
RoHS 3 EN63000-2018
IEC 61010-1
IP 54 (open)
IP 67 (closed)
UKCA Electromagnetic Compatibility Regulations 2016
UKCA Electrical Equipment (Safety) Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

OUTPUTS	
Fluid Chemistry	TAN & TBN (mg KOH/g); Oxidation, Nitration, Sulfation (Abs/.1mm); Water (parts per million); Glycol (% by weight); Soot (% by weight); Incorrect fluid (% by weight); Antioxidant Depletion (% remaining); Antiwear Depletion (% by weight)
Viscosity	Kinematic viscosity @ 40°C Calculated viscosity @ 100°C
Ferrous Debris	Total content by weight in ppm Calibration range 0-2000 ppm; and 2000 to 10,000 Limit of detection of 3 ppm Relative standard deviation of 3%
Methodology	ASTM D7889 (IR) ASTM D8092 (viscosity), ASTM D8120 (Ferrous)
Calibration	Factory, verification standards: NIST traceable verification standards provided
OPTIONAL CONSUMABLES	
600-00203	FieldLab 33C Consumables Kit, 100 pk
600-00194	FieldLab 33C Consumables Kit, 500 pk
400-00173	FieldLab 33 Grease Analysis License
600-00205	FieldLab 33C Grease Consumables Kit, 100 pk
600-00204	FieldLab 33C Grease Consumables Kit, 500 pk
600-00191	FieldLab 33C Standardization Kit
600-00188	FieldLab 33C Grease Standardization Kit

For more info visit: **www.spectrosci.com/fieldlab**

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